Translation

PATENT COOPERATION TREATY

PCT

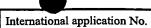


INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

10/505141

Applicant's or agent's file reference P044090	FOR FURTHER ACTION	SeeNotificati Examination	onofTransmittalofInternational Preliminary Report (Form PCT/IPEA/416)
nternational application No. PCT/JP03/01877	International filing date (day/ 20 February 2003 (2)	month/year) 0.02.03)	Priority date (day/month/year) 21 February 2002 (21.02.02)
nternational Patent Classification (IPC) on C01G 45/02, H01M 4/58, 10/4	national classification and IPC		
Applicant	TOSOH CORPOR	ATION	
 This international preliminary ex and is transmitted to the applican This REPORT consists of a total 	it according to Attere 56.		national Preliminary Examining Authority
This report is also accompamended and are the basing 10.16 and Section 607 of	panied by ANNEXES, i.e., sheets s for this report and/or sheets cor the Administrative Instructions t	s of the descript staining rectific ander the PCT).	tion, claims and/or drawings which have been cations made before this Authority (see Rule
	a total of sheets		
3. This report contains indications			
I Basis of the rep		velty, inventive	step and industrial applicability
IV Lack of unity o	of invention	gard to novelty	, inventive step or industrial applicability;
v 🖂 citations and ex	xpianations supporting scor ours	ment	
VI Certain docum	ents cited s in the international application		
4 L	rations on the international applic	eation	
Date of submission of the demand	D		ion of this report
24 July 2003 (2	24.07.03)	13	November 2003 (13.11.2003)
Name and mailing address of the IPE	A/JP A	Authorized offic	cer
1		Telephone No.	



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

PCT/JP03/01877

I. Basis of the report						
1. With regard to the elements of the international application:*						
the international application as originally filed						
the description:						
pages , as originally file	bs					
pages, filed with the deman	nd					
pages, filed with the letter of						
the claims:						
pages , as originally file	ed					
pages, as amended (together with any statement under Article 1	19					
pages, filed with the deman	nd					
pages, filed with the letter of						
the drawings:						
pages , as originally file	led					
pages, filed with the deman						
pages, filed with the letter of						
the sequence listing part of the description:						
	lođ					
pages, filed with the demar						
2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language which is the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and or 55.3). 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing: contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing the been furnished.	is: nd/ nal					
4 The amendments have resulted in the cancellation of:						
the description, pages the claims, Nos						
the drawings, sheets/fig						
5. This report has been established as if (some of) the amendments had not been made, since they have been considered to beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**	go					
* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70. and 70.17). ** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.	! to .16					

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International application No. PCT/JP 03/01877

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement						
Statement						
Novelty (N)	Claims	8-11	YES			
	Claims	1-7, 12	NO			
Inventive step (IS)	Claims	8-11	YES			
	Claims	1-7, 12	NO			
Industrial applicability (IA)	Claims	1-12	YES			
	Claims		NO			

2. Citations and explanations

Claims 1 to 7, 12 (lack novelty, inventive step)

Document 1 (JP 2001-143687 A (Kao Corp.)) cited in the international search report discloses a lithium manganese composite oxide sintered body having connected pores and a porosity of 15 to 60%. Document 1 cited in the international search report discloses the use of the above sintered body as a positive electrode on a secondary cell. A person skilled in the art could easily conceive of making the invention of the present application by shaping the aforementioned sintered body into a spherical shape or the like for use as a material for a positive electrode on a secondary cell (document 1 cited in the international search report, claims, paragraphs [0011], [0013], and [0017], and working examples).

Document 2 (JP 2002-053321 A (Titan Kogyo K.K.)) cited in the international search report discloses lithium manganese composite oxide secondary particles having an average diameter of 1 to 100 μ m and a specific surface area of 0.1 to 10 m²/g. The lithium manganese composite oxide secondary particles of the invention disclosed in document 2 are obtained using a method wherein compounds

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such as a manganese oxide and lithium carbonate are spraydried and then fired at a temperature of 500 to 1000°C (the same method used in the present invention), and are thus recognized as fulfilling the specifications of the present invention, such as open pores and the like (document 2 cited in the international search report, claims, paragraphs [0015] to [0025], and working examples).

Document 3 (WO 01/004975 A (Showa Denko K.K.)) cited in the international search report discloses lithium manganese composite oxide secondary particles having a porosity of 15% or less. Document 3 indicates that the specific surface area of the lithium manganese composite oxide secondary particles is $1.8~\text{m}^2/\text{g}$ or less (see working examples), and that particle diameter is 10 to 20 μ m (document 3 cited in the international search report, claims, page 13, line 6 to page 14, line 6, page 14, lines 27 to 30, working examples, and tables 1 to 3).

Claims 8 to 11 (are novel, involve an inventive step)

Documents 1 to 4 cited in the international search report do not disclose a method for producing lithium manganese composite oxide granular secondary particles characterized in that a slurry containing an agent for forming open pores is spray-dried to form granules. As a result of this feature, the present invention achieves the advantageous effect of being able to control pore volume (see the present application, description, page 7, lines 2 to 6).